

## NOAA SECTOR APPLICATIONS RESEARCH PROGRAM (SARP) FY 2010 INFORMATION SHEET

### I. Program Overview and Goals

The Sector Applications Research Program (SARP) supports the overarching goal of the NOAA Climate Program Office, to “understand climate variability and change to enhance society’s ability to plan and respond,” and NOAA’s efforts to establish a climate service. This will be accomplished by catalyzing and supporting interdisciplinary research and innovative outreach and education activities that enhance the capacity of key socioeconomic sectors to respond to and plan for a changing climate through the use of climate information and related decision support resources. The program is designed to systematically build an interdisciplinary and expressly applicable knowledge base and mechanism for the creation, dissemination and exchange of climate-related research findings and decision support resources critical for understanding and addressing resource management challenges in vital social and economic sectors (e.g., water resources, energy, transportation, agriculture, ecosystems, human health, society)

The overarching goals of SARP are the following:

- Provide a better understanding of the interactions among climate, human and environmental systems within key socioeconomic sectors and to identify their vulnerabilities to a changing climate.
- Improve insight and understanding related to NOAA’s stakeholder (internal and external) needs and obstacles they face in coping with climate variability and change, for an increasingly effective and relevant climate service.
- Support new and/or synthesized interdisciplinary research to produce cutting-edge knowledge, tools, methodologies, etc., for decision makers’ use in vulnerability analysis, planning, adaptation, mitigation, etc.
- Advance the infusion of climate information, including information on climate risks and uncertainty, in sector-specific decision making processes on various scales.
- Promote partnerships between the scientific and sector-specific decision-making community (e.g., Federal interagency initiatives such as NIDIS, broader NOAA mandates, as well as non-Federal such as non-governmental organizations (NGO) and the private sector)

The identification of specific sectors to be addressed by this program depends upon NOAA priorities, program budgets, and input from the Federal, research, and decision-making communities. For FY10, SARP will continue to support projects specifically for the coastal and water resource management sectors. In addition, SARP is part of a consortium of several NOAA Climate Program Office programs supporting drought impacts research through the National Integrated Drought Information System (NIDIS), “Coping with Drought” initiative.

- **SARP – Coasts:** specifically seeks to catalyze and support applications research that links climate science with practical challenges in coastal regions where over 50% of

the world's population resides. Coastal communities face a complex suite of interrelated issues, which can be compounded by climate variability and change.

- **SARP – Water:** supports applications research on the influence of climate variability and change on water resource management primarily in urban environments, where over half of the world's population currently resides, and points us toward specific products and information services that will enhance response/coping capacity.
- **SARP – Coping with Drought in Support of NIDIS:** is particularly interested in funding research projects specifically addressing human populations coping with drought within the U.S. or U.S. transboundary areas.

*Information about current and past SARP projects can be found at:  
[http://www.climate.noaa.gov/cpo\\_pa/sarp/](http://www.climate.noaa.gov/cpo_pa/sarp/).*

## **II. Program Approach and Structure**

SARP pursues its objectives through the establishment of sector-focused projects comprised of a combination of competitive applied research/decision support resource development, outreach and community building, and the establishment of productive partnerships with sector-specific decision-making and technical entities. These activities are conducted within a sectoral framework that provides a construct for defining: the nature, requirements and capabilities of a relatively bounded suite of stakeholders; the applications and decision support research priorities and associated interdisciplinary community to tap into (or to stimulate) to address these needs and priorities; and the key partners needed to effectively create, disseminate and apply climate information in a particular sector.

From a programmatic perspective, each of these sector projects can be viewed as organizing/integrating systems that serve as a plane for understanding and addressing many complex socioeconomic issues that are influenced by climate, and for developing linkages with specific decision makers and partners. While a common framework and approach will be utilized for all of the SARP sector projects (e.g., stakeholder requirements workshops, competitive funding opportunities to advance decision support resource development), the exact nature of the research activities and partnerships developed for each is, and will be, highly influenced by a sector's information needs, partners, and state of readiness.

## **III. FY 2010 Funding Opportunities**

Listed below are FY10 funding priorities for the coastal and water resource management sectors as well as a drought-related solicitation. In addition, the SARP program is beginning to explore the possibility of expanding to a new sector; we have included an opportunity for preliminary work towards that endeavor.

Priorities for the Coastal and Water Resource Management Sectors –

For FY10, SARP will concentrate funding in two focus areas: (A) a directed focus on understanding the needs and gaps for climate information faced by decision makers in distinct climate-impacted communities; and (B) a topical focus on improving decision support capacity under a changing climate.

*Decisions on the number of projects to fund for each focus area will be determined by the quality and quantity of proposals received in response to this call and the availability of funds.*

A description of each focus area follows.

*A. Understanding the needs and gaps for climate information faced by decision makers in distinct climate-impacted communities.* With increased awareness of climate and related impacts, there has been an associated demand for climate forecasts and information. Requests from coastal and water resource management decision makers differ in their specificity and sophistication of the knowledge of current and future climate information products and the potential for development of products. As a result, this year we are funding projects by investigators who will work with a defined community of decision makers and/or their associated national interest group, within the coastal or water sectors, to ascertain and communicate: (a) the key vulnerabilities to changing climate conditions faced by the community; (b) their accessibility to relevant climate information and products (c) their current use of climate information for decision making and (d) their specific needs for climate forecasts, projections, and information products at relevant spatial and temporal scales. The definition of a “community” should be specific and may encompass a topical area (e.g., coastal real estate agents, wastewater managers, hydroelectric managers, etc.), geographic entity (e.g., river basins, barrier islands along a specific coast, etc.) or even administrative unit (e.g., towns along a river, Native American Nation, etc.).

Additional components could include (a) an assessment of the existing knowledge to action networks and readiness for increased use of climate products, and/or (b) the development of a tool, model, methodology or other outreach materials (including handbooks and synthesis documents) to address their needs. A plan for dissemination of the findings would be critical for this task.

*B. A topical focus on improving decision support capacity under a changing climate.* The FY10 SARP competition will focus on supporting adaptation and mitigation approaches to reduce vulnerability and increase the nation’s resilience to the influence of climate variability and change in coastal and water environments. The results of the grants are expected to produce specific products and information services that will enhance response and coping capacity. This year, we are specifying three topics for each Sector. For SARP-Coasts these include: sea level rise, marine habitats, and marine resources; for SARP-Water these include: urban flooding, urban water resource planning, and water management and

energy. Specifically, SARP will support individual projects that address one of the abovementioned topics within the realm of one of the following issue areas:

- Assessing impacts and/or the benefits of enhancing preparedness associated with climate variability and change. These assessments could include, for example: indirect or secondary economic impacts, development of socioeconomic baselines and vulnerability assessments, and/or tools for generating risk and adaptation scenarios.
- Characterizing climate related risk and/or vulnerability by institutions faced with making decisions about managing resources in a changing climate. We are interested in determining what variables influence them to respond proactively to threats and potential hazards and would like to identify future hot spots that will be vulnerable to a changing climate.
- Developing prototype decision support resources and methodologies that are designed to integrate the social and natural aspects of climate science into efforts to reduce vulnerability and increase community resilience in the face of climate variability and change, and related hazards (including insights into how such tools should be evaluated). Examples of decision support resources include: visualization tools, synthesis documents, handbooks for decision makers, etc.
- Creating and communicating innovative and transferable methodologies and products that provide public awareness and education frameworks for interacting with those affected by climate on actual and potential impacts, how these impacts affect human and natural systems, and which actions can be undertaken to mitigate impacts in coastal regions.

*Please note that a proposal would most likely address only one topic and one issue area.*

For further information, contact Nancy Beller-Simms (301-734-1205); (Nancy.Beller-Simms@noaa.gov) for the SARP-Water and Coping with Drought proposals; Adrienne Antoine (301-734-1201); (Adrienne.Antoine@noaa.gov) for the SARP-Coasts proposals.

*Priorities for Drought - in support of the National Integrated Drought Information System (NIDIS) -*

While SARP is a sector-based program, individual projects often focus on a specific geographic location. Therefore for FY 2010, SARP will be funding research projects in watersheds in the following geographic areas (in no particular order):

1. Transboundary – (a) US and Mexico (e.g., the Rio Grande) and (b) US and Canada (specifically the Pacific Northwest) and (c) California border (Oregon, Arizona, Mexico).
2. Coastal (specifically the Chesapeake Bay watershed).

Projects that will be funded will address the risk perception, analysis and management as well as specific socioeconomic and institutional aspects of drought planning that:

- Characterize climate-related risk perception by institutions faced with making decisions in a changing climate
- Assess the components and types of risk analysis that are needed for planning for a changing climate
- Assess impacts including indirect or secondary economic impacts, develop socio-economic baselines, and/or tools for generating drought risk scenarios (e.g. water supply analyses)
- Understand how a jurisdiction (local, regional or state) plans to respond to water demand in the face of drought. Specifically we are interested in understanding how decisions are made to allocate water given competing needs from the residential, agricultural and environmental sectors
- Analyze the benefits of mitigation and preparedness for drought impacts, including an examination of short-term decision - making in the context of long-term adaptation
- Characterize the readiness of institutions, within the focused watersheds listed above or the current NIDIS pilots, that are dealing with drought to utilize climate information

It is not our intention that one award would address all of these items or geographic areas.

Awardees would be required to report findings and communicate throughout the lifetime of the grant with both NOAA - SARP and NIDIS personnel. For additional information about SARP's drought focus, please contact Nancy Beller-Simms at 301-734-1205, or [Nancy.Beller-Simms@noaa.gov](mailto:Nancy.Beller-Simms@noaa.gov).

#### Exploring New Sectors Relevant to NOAA –

In support of NOAA's climate service efforts, SARP will begin to explore the possibility of expanding to include one or more new sectors. In FY10, SARP will support initial efforts that investigate the societal need and readiness of other potential sectors that meet NOAA's climate mission, the priorities of the NOAA Climate Program Office, and the goals of NOAA's climate service efforts. This would include activities such as scoping meetings and stakeholder requirement workshops. It is anticipated that SARP will fund several different activities, each with a maximum budget of \$50,000. We encourage both individual endeavors as well as proposed work with partner organizations and agencies.

#### **IV. Additional Project Information**

This section is intended to provide additional information regarding the traditional nature of the individual research projects supported by SARP.

#### *Nature of SARP Investigator Teams*

Multidisciplinary teams of investigators are often best suited for addressing the complex issues related to climate, society and enhanced adaptation through the use of science and technology. Thus, the SARP effort encourages proposals from PI teams comprised of disciplines of the social and natural sciences. In the past, most of the successful projects have integrated social with natural or physical science components to form a more comprehensive analysis of the dynamics of climate-human interactions. Furthermore, proposals involving local, state and federal agency decision makers/stakeholders/resource managers as direct participants (e.g., in the design, implementation, and evaluation of the project) are highly recommended. This year, we encourage projects to include a member of the community that would be involved in the project as a co-PI. Finally, the proposal should include an explanation of the roles of the investigators and how the team will interact and integrate the multiple components. Investigators who will not be requesting funds for salaries must also be listed along with their estimated time of commitment.

#### *Transferability*

The proposals that have been most successful in securing funding in the past had components within the research or application that were explicit as to how the results of their work could be used in other areas/arenas or sectors and proposed a mechanism (e.g., having someone from another area involved in a workshop) for transferring the knowledge there.

#### *Geographic Focus, Stakeholder Participation, and Partnerships*

Unless otherwise noted, SARP projects may have a geographically defined scope within the US or overseas where the impacts of climate variability and change are acute and/or significant and relevant to NOAA interests. Research teams should present evidence of strong collaborations with local researchers and institutions (e.g., NGOs, extension services, state and local governments, representative private sector organizations) in the region of study. Letters of support from local collaborators and supporters should be included with the proposal. We strongly encourage projects to include an evaluation component at the end of the project (and/or earlier if appropriate) that involves stakeholders, and evidence of stakeholder support (e.g., cost-sharing, letters of support). In addition, we encourage the development or strengthening of partnerships between researchers and critical decision-making institutions. We also welcome participation with other federal, state and local agencies.

#### *Funding Levels*

The total project cost (i.e., for all subcontracts and linked projects) is expected to fall between \$50k - \$300K. Projects should be 6-24 months in duration, with clear and discrete outcomes, impact, and/or products at the end of this period. Cost sharing is encouraged.

#### *Specifics about the Proposal*

Proposals that can show that they are building on what is already known from the published literature about the proposed topic (e.g., value of climate information, decision making under uncertainty, use/transfer of new scientific information, integrated modeling of natural and human systems, impact of climate on sector activities, sectoral decision making analyses) prove that the PIs have a comprehension of the topic and that their proposed work will augment the existing science. Projects that have been funded through SARP (or its predecessor programs) are listed on our website along with associated annual and final reports ([www.climate.noaa.gov/cpo\\_pa/sarp](http://www.climate.noaa.gov/cpo_pa/sarp)). In addition, we have included a list of current and relevant references for optional use at the end of this document.

We encourage investigators to: 1) define (in a sentence or two) in the abstract or introduction the problem they are addressing; 2) describe in extensive detail the proposed methodology and how it will be accomplished; 3) clearly define expected outcomes; 4) provide a descriptive benefit analysis of the outcome; 5) describe their plan to measure the success of the project's outcome; 6) describe a dissemination plan for the study's results; and 7) provide a description of a sector's readiness and need for climate information. (Please note that support for extensive modeling of the physical and natural system is more appropriately handled through climate science programs both within the other sections of NOAA's Climate Program Office and other agencies.)

#### *Communication of Results and Progress Reports*

Investigators will be expected to provide annual progress reports in a prescribed format that highlight scientific progress as well as linkages to practical applications (see the "Community Corner" section of the website ([http://www.climate.noaa.gov/cpo\\_pa/sarp/](http://www.climate.noaa.gov/cpo_pa/sarp/))). We also encourage creative methods of conveying the results of work done under the grant or more general knowledge about climate-human interactions to the broader community of researchers and decision makers. For example, information can be displayed on websites, in non-scientific newsletters, on CDs, on short video documentaries that can be copied and disseminated, etc.

#### *Interaction with NOAA*

Applicants whose proposals are chosen for funding will be expected to undertake an ongoing dialogue with NOAA's Climate Program Office. Part of this dialogue may consist of a Principal Investigators' meeting of funded projects to discuss common questions and frameworks to be addressed in the new research projects and periodic teleconferences with other SARP-funded Principal Investigators and responses to periodic updates on the project status made throughout the term of the grant.

#### *Process*

Interested applicants are highly encouraged to submit a 1-2 page Letter of Intent (LOI) to the aforementioned Program Managers by June 12, 2009.

Information about how and when to submit a proposal will be posted on <http://www.climate.noaa.gov/opportunities> when the program announcement is released via the Federal Register. We anticipate this release in early July.

NOAA will conduct a peer review process to determine the best proposals per the descriptions in this information sheet and the program announcement. Proposals being offered funding for this fiscal year will be announced in the summer of 2010.

*List of Suggested Reviewers (optional)*

Proposers are invited to include a list of suggested reviewers who they believe are especially well qualified to review the proposal. These suggestions are optional and the decision whether or not to use the suggested reviewers remains with the Program Manager. All reviewers will eventually be asked to sign a conflict of interest statement.

**V. Selected references relating to SARP's efforts**

- Brekke, L.D., Kiang, J.E, Olsen, J.R, Pulwarty, R.S, Raff, D.A, Turnipseed, D.P, Web, R.S, and White, K.D. 2009. Climate Change and Water Resource Management: A Federal Perspective: U.S. Geological Survey Circular 1331, 65p.
- IPCC, 2007: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Avery, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Jacobs, K.L., (2002), Connecting Science, Policy and Decision-Making: A Handbook for Researchers and Science Agencies, National Oceanic and Atmospheric Administration, Office of Global Programs, Silver Spring, Maryland.
- National Research Council. 1999. Making Climate Forecasts Matter. National Academy Press, Washington, D.C.
- National Research Council. 2009. Informing Decisions in A Changing Climate. National Academies, Washington, D.C.
- National Research Council. 2009. Restructuring Federal Climate Research to Meet the Challenges of Climate Change. National Academies, Washington, D.C.
- NIDIS Implementation Team. 2007. The National Integrated Drought Information System Implementation Plan.
- U.S. Climate Change Science Program, 2008. Synthesis and Assessment Product 5.3 Decision-Support Experiments and Evaluation using Seasonal-to-Interannual Forecasts and Observational Data: A Focus on Water Resources.

Other Relevant Websites:

- SARP: [http://www.climate.noaa.gov/cpo\\_pa/sarp/](http://www.climate.noaa.gov/cpo_pa/sarp/)
- Regional Integrated Sciences and Assessments: [http://www.climate.noaa.gov/cpo\\_pa/risa/](http://www.climate.noaa.gov/cpo_pa/risa/)
- Transition of Research Applications to Climate Services: [http://www.climate.noaa.gov/cpo\\_pa/nctp/](http://www.climate.noaa.gov/cpo_pa/nctp/)
- U.S. Climate Change Science Program: <http://www.climatescience.gov/default.php>
- NWS Climate Services: <http://www.weather.gov/os/csd/index.php>
- NIDIS: <http://www.drought.gov/>